

Notice of Allowability

Applicant(s)

09/677,578

Examiner

Leonard S Liang

Applicant(s)

NAGAHASHI, TOSHINORI

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the claims filed on 01/26/04.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ The drawings filed on 11 March 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Stephen D. Meier
Primary Examiner

DETAILED ACTION

Formal Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jaquelin Spong on 05/20/04.

In claim 1, line 4, delete the word --a-- after the word "of" and before the word "pins" so that the line reads "plurality of pins".

Allowable Subject Matter

Claims 1-12 are allowed.

The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claims 1-5 is the inclusion of the method steps being "examining a relationship of a position, in each printing pass, of each of a plurality of pins provided in a vertical direction of the printing head to a plurality of raster lines to be printed in a predetermined printing range, based on a vertical resolution of the print data, when a unit of vertical transfer of the printing head is not a reciprocal of an integral vertical resolution of the print data, and a pitch of the pins of the printing head is not any one of an integral multiple of the vertical resolution and the reciprocal of the integral vertical resolution; preparing a raster-line/pin-relationship table in which pins to be actuated for printing the raster lines to be printed

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are determined in each printing pass based on the relationship between the position of the pins and the raster lines; printing the predetermined printing range by actuating the pins in each printing pass based on the raster-line/pin-relationship table, the pitch of the pins of the printing head, the amount of the unit of vertical transfer of the printing head, the position of the print-starting raster line, and a number of passes in the horizontal direction required for printing the predetermined printing range". It is these steps found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 6-10 is the inclusion of the limitations of "a raster-line/pin-relationship table describing pins to be actuated in each printing pass for printing raster lines to be printed based on a relationship between a position of the pins and the raster lines when a unit of vertical transfer of the printing unit is not a reciprocal of an integral vertical resolution of the print data, and a pitch of the pins of the printing head is not any one of an integral multiple of the vertical resolution and the reciprocal of the integral vertical resolution, the printing performed by examining the relationship of the position, in each printing pass, of each of the plurality of the pins provided in a vertical direction of the printing head to the raster lines to be printed in a predetermined printing range; a printer driver that determines the position of a print-starting raster line and the number of printing passes, consults the raster-line/pin-relationship table, and outputs a pin driving signal for each driving pass according to the raster-line/pin-relationship table; the printing range based on the vertical resolution of the print data, the pitch of the pins of the printing head, an amount of a unit of vertical transfer of the printing head, the position of the print-starting raster line, and a number of passes in a horizontal direction

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required for printing the predetermined printing range”. It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 11 is the inclusion of the method steps being “examining a relationship of a position, in each printing pass, of each of a plurality of marking elements provided in a vertical dimension of the printing head to a plurality of raster lines to be printed in a predetermined printing range, based on a vertical resolution of the print data, when a unit of vertical transfer of the printing head is not a reciprocal of an integral vertical resolution of the print data, and a pitch of the marking elements of the printing head is not any one of an integral multiple of the vertical resolution and the reciprocal of the integral vertical resolution; preparing a raster-line/marketing element-relationship table in which marking elements to be actuated for printing the raster lines to be printed are determined in each printing pass based on the relationship between the position of the marking elements and the raster lines; printing the predetermined printing range by actuating the marking elements in each printing pass based on the raster-line/marketing element-relationship table, the pitch of the marking elements of the printing head, the amount of the unit of vertical transfer of the printing head, the position of the print-starting raster line, and a number of passes in the horizontal direction required for printing the predetermined printing range”. It is these steps found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 12 is the inclusion of the limitations of “a raster-line/marketing element-relationship table describing marking elements to be actuated in

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each printing pass for printing raster lines to be printed based on a relationship between a position of the marking elements and the raster lines when a unit of vertical transfer of the printing head is not a reciprocal of an integral vertical resolution of the print data, and a pitch of the marking elements of the printing head is not any one of an integral multiple of the vertical resolution and the reciprocal of the integral vertical resolution, the printing performed by examining the relationship of the position, in each printing pass, of each of the plurality of the marking elements provided in a vertical direction of the printing head to the raster lines to be printed in a predetermined printing range; a printer driver that determines the position of a print-starting raster line and the number of printing passes, consults the raster-line/marketing element-relationship table, and outputs a marking element driving signal for each driving pass according to the raster-line marking element-relationship table; the printing range based on the vertical resolution of the print data, the pitch of the marking elements of the printing head, an amount of a unit of vertical transfer of the printing head, the position of the print-starting raster line, and a number of passes in a horizontal direction required for printing the predetermined printing range". It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bates et al (US Pat 5959646) discloses a method of printing with an ink jet printer using independent shingling on a raster by raster bars.

Hickman (US Pat 6336701 B1) discloses ink-jet print pass microstepping.

Marra, III et al (US PgPub 20030151640 A1) discloses a method of selectively underfeeding print media in an ink jet printer.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Stephen D. Meier
Primary Examiner